UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,822	04/12/2001	Keiichi Sato	Q64076	1928

7590 12/12/2003

SUGHRUE, MION, ZINN,
MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037

EXAMINER	
GOFF II, JOHN L	
ART UNIT	PAPER NUMBER
1733	9

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,822	SATO, KEIICHI	
	Examiner	Art Unit	
	John L. Goff	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This action is in response to Amendment B filed on 9/26/03.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. Claims 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 4 requires "each said flat board-shaped laminate comprises only one flat-shaped board laminate". It is unclear what this limitation requires. In view of applicants description on page 14 of Amendment B the examiner has interpreted the limitation to require forming each flat-board shaped laminate from a single/continuous flat-board shaped laminate cut into a plurality of boards. Applicant is asked to clarify what is required by the limitation.

5. Claim 5 requires "thermosetting resin or a thermoplastic resin" in lines 2 and 3. However, line 10 requires "a thermosetting resin". It is suggested to delete "or a thermoplastic resin".

Claim Rejections - 35 USC § 103

6. Claims 1 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKague et al. (U.S. Patent 5,954,898) in view of Hiyamizu et al. (JP 02030518 and its English translation) and DellaVecchia et al. (U.S. Patent 4,269,884).

McKague et al. are directed to a method of fabricating intermediate parts from composite materials (Column 1, lines 18-21 and Column 3, lines 1-21). McKague et al. teach fiber-reinforced composite preforms (sheets) comprising reinforcing fiber (graphite) impregnated with thermosetting resin (epoxy) (Column 3, lines 62-64 and Column 11, lines 15-18). McKague et al. teach a method for fabricating intermediate parts from the fiber-reinforced composite preforms comprising: a) stacking a plurality of the preforms (Figures 2 and 4 and Column 5, lines 26-29), laminating the stack under heat and pressure to form a composite laminate (Figures 2 and 4 and Column 5, lines 46-49, 52-53, and 62-64), and cooling the composite laminate to room temperature (Column 6, lines 5-9); b) cutting the laminate into a pattern (Figures 2 and 4 and Column 6, lines 11-15); and c) heating the laminate to partially cure it, (Figures 2 and 4 and Column 6, lines 17-20 and 34-38) and reshaping the laminate using a cool press forming tool (Figures 2 and 4 and Column 6, lines 20-22). McKague et al. further teach using the partially cured, i.e. semi-hardened, intermediate parts to create other parts (Figures 4 and 10 and Column 7, lines 54-61). McKague et al. are silent as to forming the composite laminates (step a) through a continuous rather than batch process. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the composite laminates (step a) taught by McKague et al. using a continuous process as suggested by Hiyamizu et al. to reduce the time and handling involved to produce the laminates.

Regarding claim 1, McKague et al. are silent as to the specific laminating conditions, i.e. heat, pressure, time, etc., for steps a and c. However, it is noted McKague et al. are not limited to any specific resin, and the only specific resin mentioned in McKague et al. is epoxy which is one of applicants preferred resins (See page 3, lines 24 and 25 of the specification). It would have been obvious to one of ordinary skill in the art at the time the invention was made to experimentally determine/optimize the laminating conditions for steps a and c in the method taught by McKague et al. as modified by Hiyamizu et al. as a function of the specific resin used (it being noted that both McKague et al. and applicant prefer the same resin which would require similar laminating conditions) as doing so would require nothing more than ordinary skill and routine experimentation.

Regarding claim 4, McKague et al. as modified by Hiyamizu et al. show forming a T-shaped intermediate product from a plurality of L-shaped board laminates wherein the flat board-shaped laminates in the product weere formed continuously, i.e. from one flat-shaped board laminate cut into a plurality of boards.

Regarding claims 5-7, McKague et al. teach the intermediate part is only partially cured, i.e. semi-hardened, such that the shape of the part can be maintained in further processing, including additional curing. One of ordinary skill in the art at the time the invention was made would have readily appreciated that what is require by McKague et al. is thus only partially hardening the part, e.g. to a degree of 1 to 80 % or any degree within that range, to a stable state so that the thermosetting resin is able to undergo further processing, e.g. molding.

Hiyamizu et al. are directed to a process for producing composite laminates from fiber-reinforced composite materials wherein the improvement is in forming the laminates by a

continuous process rather than a batch process (Page 3, lines 1-3). Hiyamizu et al. teach fiber-reinforced prepreg materials comprising reinforcing fiber (carbon) impregnated with resin. Hiyamizu et al. teach the continuous (automatic) process for forming the composite laminates comprises: a) laminating a plurality of the prepreg materials to each other by contacting with a plurality of hot press rolls (Rolls 16, 17, 19, 19a, 20, 20a, etc. of the Figure) followed by contacting with a cooling plate (29 of the Figure) to form a board-shaped composite laminate; and b) cutting the board-shaped laminate into a board (38 of the Figure).

It is noted Hiyamizu et al. teach a cooling plate as the cooling means and not cold press rolls. However, it would have been well within in the purview of one of ordinary skill in the art at the time the invention was made to use as the cooling means in the process taught by McKague et al. as modified by Hiyamizu et al. cold press rolls as these rolls were well a known cooling alternative in the art as shown for example by DellaVecchia et al. and only the expected results would be achieved, i.e. cooling the laminate.

DellaVecchia et al. (U.S. Patent 4,296,884) are directed to a stampable fiber reinforced thermoplastic sheet (Column 1, lines 5-9). DellaVecchia et al. teach a process for forming the stampable sheet comprising feeding layers of composite material (resin and fiber) to a laminating apparatus (Figure 1 and Column 2, lines 31-42), laminating the layers into a stampable sheet using heated press rolls (heating under pressure) followed by cooled press rolls (cooling under pressure) (Figure 1 and Column 3, lines 13-17 and 34-45), and cutting the laminated layers into stampable sheets (Figure 1 and Column 3, lines 43-45). DellaVecchia et al. further teach a stamping process comprising heating the stampable sheet followed by press forming the sheet (Figure 2 and Column 4, lines 37-45).

Response to Arguments

7. Applicant's arguments with respect to claims 1 and 4-7 have been considered but are moot in view of the new ground(s) of rejection. New rejections were made for the new claims (claims 4-7). It is noted DellaVecchia et al. has been added to the heading of the rejection (See paragraph 6). The reference was previously erroneously omitted from the heading. However, its addition is not a new grounded rejection as DellaVecchia et al. was applied in the rejection made in the previous office action, and DellaVecchia et al. was addressed in applicants response.

Applicant argues "Thus, since McKague is silent regarding the detailed conditions for forming a shaped semi-hardened product as called for in the claims of the present application, quite clearly one of ordinary skill in the art, referring to McKague, would not be motivated to reach amended claim 1." As noted above regarding the detailed conditions, i.e. the heat, pressure, and time required in steps a and c, the examiner notes McKague et al. are silent as to the specific laminating conditions, i.e. heat, pressure, time, etc., for steps a and c. However, it is noted McKague et al. are not limited to any specific resin, and the only specific resin mentioned in McKague et al. is epoxy which is one of applicants preferred resins (See page 3, lines 24 and 25 of the specification). It would have been obvious to one of ordinary skill in the art at the time the invention was made to experimentally determine/optimize the laminating conditions for steps a and c in the method taught by McKague et al. as modified by Hiyamizu et al. and DellaVecchia et al. as a function of the specific resin used (it being noted that both McKague et al. and applicant prefer the same resin which would require similar laminating conditions) as doing so would require nothing more than ordinary skill and routine experimentation. Applicant further agues that Hiyamizu and DellaVecchia do not teach forming a semi-hardened product or the

detailed conditions required by claim 1. It is noted Hiyamizu et al. is cited only to show the well known technique of forming composite laminates from fiber-reinforced composite materials using a continuous rather than batch process, and further regarding the detailed conditions (although it is noted the rejection does not rely on these conditions), Hiyamizu et al. teach these conditions can be adjusted as desired (See page 6, lines 12-14 of the translation). As to DellaVecchia et al. the reference is only cited to show cooling rolls are well known in the art.

Regarding claim 4, applicants arguments are addressed above in paragraphs 4 and 6.

Regarding claims 5-7, applicant argues "Accordingly, on this record, there is no teaching whatsoever in the prior art which would suggest an intermediate product as a semi-hardened product having a hardening degree of 1 to 80% as called for in claim 5 or suggest the narrow hardening degree of claims 6 and 7". As noted above regarding the hardening degree, McKague et al. teach the intermediate part (a part that may undergo further processing) is only partially cured, i.e. semi-hardened, such that the shape of the part can be maintained in further processing, including additional curing (Column 6, lines 33-37). One of ordinary skill in the art at the time the invention was made would have readily appreciated that what is require by McKague et al. is thus only partially hardening the part, e.g. to a degree of 1 to 80 % or any degree within that range, to a stable state so that the thermosetting resin is able to undergo further processing, e.g. molding.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481** (after December 2003 the telephone number will be 571-272-1216). The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

John L. Goff
December 4, 2003

JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300